

Application No. TBA

Prelim. Amd. dated Nov. 17, 2003

Title: AQUEOUS NANOPARTICLE CERAMIC AGGLOMERATE DISPERSION FOR FORMING INK-ABSORBING LAYER OF INK-JET RECORDING MEDIUM

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Kindly delete Claims 2, 4, and add new Claims 10-20.

1. (Currently Amended) An aqueous nanoparticle ceramic agglomerate dispersion, for forming an ink-absorbing layer of an ink-jet recording medium, comprising:

- a nanoparticle ceramic agglomerate dispersed in deionized water;
- said nanoparticle ceramic agglomerate having an average diameter of 0.05 to 0.3 μm ~~at a viscosity suitable for coating of 10 to 200 mPa·s~~ as measured by a laser diffraction particle size distribution measurement apparatus, at a viscosity suitable for coating of 10 to 200 mPa·s as measured at 22°C at 2.5 rpm using a E-type viscometer and
- said nanoparticle ceramic agglomerate having a size distribution curve such that the ratio of peak width at a height which is half the maximum height of said curve, determined according to the results of said measurement, to the maximum height is 0.7 or less;
- said dispersion having been prepared by ultra-high pressure counter jet streams of the dispersion colliding with each other.

2. (Cancelled)

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3. (Original) An ink-jet recording medium having an ink-absorbing layer deposited on a surface thereof produced from the aqueous nanoparticle ceramic agglomerate dispersion of claim 1.

4. (Cancelled)

5. (Original) The ink-jet recording medium according to claim 3 wherein said dispersion further contains a cationic polymer.

6. (Original) The ink-jet recording medium according to claim 3 wherein said surface is a water absorbing paper recording surface.

7. (Original) A method of making an ink jet recording medium comprising applying to a recording surface a coating of the aqueous nanoparticle ceramic agglomerate dispersion of claim 1, cooling the coating, and drying the coating to produce said recording medium.

8. (Original) The method according to claim 7 wherein said recording surface is a water absorbing papers.

9. (Original) The method according to claim 7 wherein said dispersion also contains a cationic polymer.

10. (New) The aqueous nanoparticle ceramic agglomerate dispersion according to claim 1, wherein the nanoparticle ceramic agglomerate is a member selected from the group consisting of SiO₂, Al₂O₃, and TiO₂.

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11. (New) The aqueous nanoparticle ceramic agglomerate dispersion according to claim 1, wherein the aqueous nanoparticle ceramic agglomerate dispersion is made by subjecting nanoparticle ceramic agglomerates to treatment in a jet mill apparatus in which counter jet streams of the dispersion collide with each other at a jet stream radius of 0.1 mm at a collision position, at a jet stream velocity 600 m/sec and a flow rate of the jet stream at the nozzles of 15 liters per minute for a predetermined time to disintegrate the nanoparticle ceramic agglomerates.

12. (New) A nanoparticle ceramic agglomerate having an average diameter of 0.05 to 0.3 μm as measured by a laser diffraction particle size distribution measurement apparatus, and a size distribution curve such that the ratio of peak width at a height which is half the maximum height of said curve, determined according to the results of said measurement, to the maximum height is 0.7 or less.

13. (New) A method of making an ink-jet recording medium comprising depositing on said medium the aqueous dispersion of claim 1.

14. (New) An aqueous dispersion comprising a cationic polymer and nanoparticle ceramic agglomerates having an average diameter of 0.05 to 0.3 μm as measured by a laser diffraction particle size distribution measurement apparatus, and a size distribution curve such that the ratio of peak width at a height which is half the maximum height of said curve, determined according to the results of said measurement, to the maximum height is 0.7 or less.

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15. (New) A method of making an aqueous dispersion comprising dispersing nanoparticle ceramic agglomerates in water to thereby form an aqueous dispersion and subjecting the resulting dispersion to a jet mill in which counter jet streams of the dispersion are collided with each other.

16. (New) The method according to claim 15 wherein the jet stream has a radius of 0.1mm, velocity of 600 m/sec and a flow rate of 15 liters/minute.

17. (New) Paper for inkjet printing having deposited thereon a coating resulting from the aqueous dispersion according to claim 1.

18. (New) The paper according to claim 17 having a color image printed thereon.

19. (New) The aqueous dispersion according to claim 1 wherein the ceramic is a member selected from the group consisting of silica, alumina and titania.

20. (New) The aqueous dispersion according to claim 19, wherein the ceramic is prepared by gas phase hydrolysis.